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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/489,594	01/21/2000	Donald James Macleod	A-67848/JAS/WEN	6026

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EXAMINER

PATEL, VISHAL A

ART UNIT	PAPER NUMBER
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3676

DATE MAILED: 11/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/489,594

Applicant(s)

MACLEOD ET AL.

Examiner

Vishal Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7 is/are pending in the application.
- 4a) Of the above claim(s) 6 and 8-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3 and 4. 6) ☐ Other: _____

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DETAILED ACTION

Election/Restrictions

Claims 6, 8-10 and 11-20 are further restricted, since claims do not read upon the elected species figure 3 as submitted on 8/25/03.

Drawings

1. The drawings were received on 9/2/03. These drawings are accepted and approved by the examiner.

Information Disclosure Statement

2. The information disclosure statements (IDS) submitted on 5/1/00, 6/30/00 and 1/3/01 are considered by the examiner.

Claim Objections

3. Claim 2 is objected to because of the following informalities: delete "and" in line 2. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-5 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, lines 11-12, "a surface of a pole of the magnet", this language make the claim unclear. Is "a pole" referring back to the top pole or a bottom pole or a third pole or a surface of the magnet?

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Raj et al (US. 4,357,024).

Raj discloses a seal for sealing an outer surface of a magnetically permeable shaft and a inner surface of a hub disposed about the shaft (intended use), the seal comprising:

an annular magnet (14) positioned between the shaft (shaft 26 which is similar to the shaft 74 of US. 3,620,584) and the hub (108, the shaft can be rotating or be stationary, see patent 3,620,584 which is incorporated by reference by Raj, column 4, lines 28-30);

a top pole piece (18) and a bottom pole piece (16) coupled to opposite poles of the magnets, the top and bottom pole pieces comprising a material which is magnetically permeable, and having annular shapes with interior radii that are larger than the radius of the outer surface of the shaft (the top and bottom pole pieces have annular shape with interior radii that are larger than the shaft), the top pole piece comprising a cross-sectional area that is substantially L-shaped (18 has an L-shape), having a horizontal portion (portion of 18 that is parallel to a surface of the magnet) substantially parallel to a surface of the magnet, and a shorter vertical (portion of 18 that is parallel to a surface of the shaft 26) portion in a facing, non contact relationship to the outer surface of the shaft;

the horizontal portion and the vertical portion form a corner;

a ferrofluid (24) magnetically held between the vertical portion of the pole piece and the outer surface of the shaft to form a seal therebetween;

the top pole piece is separated from the outer surface of the shaft by a gap (20) which is smaller than a distance separating the top pole piece from the bottom pole piece (figure 1);

the shaft further comprises an inner race (102 of patent '584) of a bearing separating the shaft from the hub, the gap is smaller than a distance separating the top pole piece from the inner race of the bearing (since 18 or 16 has a thickness larger than gap 20, the distance separating the top pole piece from the inner race of the bearing is larger than the gap);

a base to which the shaft is coupled (where the shaft 74 which is similar to shaft 26 is connected to by keys 84 or 86, see patent 3,620,584 figures);

a bearing capable of rotatably supporting the hub about the shaft, the bearing having inner and outer races affixed to the shaft and hub respectively (races 102 and 106, which the one race is coupled to either the shaft or hub and the other coupled to either the shaft or hub);

magnets (magnet attached to 108) attached to the hub;

a stator winding on the baseplate capable of interacting with the magnets on the hub to cause it to turn relative to the shaft (this is the case when one of the shaft or hub are rotating, see patent 3,620,584).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raj in view of Raj et al (4,830,384, referred as Raj '384).

Raj discloses the invention substantially as claimed above but fails to disclose the corner to be curved (since the corner is curved a spread of magnetic flux gradient over a larger area thereby enabling the ferrofluid to be held over a larger area). Raj '384 discloses to have a corner to be rounded (54 which is rounded) instead of being a sharp corner (showed in prior art figures 1-2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the corner of Raj to be curved as taught by Raj '384, to reduce fringing or bulging of magnetic fields outside of the gap (column 5, lines 3-5 of Raj '384).

10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raj in view of Ishikawa (US. 5,050,891).

Raj discloses the invention substantially as claimed above but fails to disclose a nickel cladding is applied to the top pole piece to provide a substantially smooth surface in contact with the ferrofluid. Ishikawa discloses a top pole to have a nickel cladding (coating 4 on 3, figures 1-2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the top pole piece of Raj to have a coating as taught by Ishikawa to provide a non-magnetic surface to retain the ferrofluid, a sufficient conductive contacting area and reduce electrical resistance (column 1, lines 59 to column 2, line 15).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Rosensweig and Hosaya.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vishal Patel whose telephone number is (703) 308-8495. The examiner can normally be reached on Monday through Friday from 7:30 PM to 4:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight, can be reached on (703) 309-3179.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-2168. Technology Center 3600 Customer Service is available at 703-308-1113. General Customer Service numbers are at 800-786-9199 or 703-308-9000. Fax Customer Service is available at 703-872-9325.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to: 703-872-9326, for formal communications for entry before Final action: or,
703-872-9327, for formal communications for entry after Final action.

For informal or draft communications, please label "**PROPOSED**" or "**DRAFT**" and fax to: 703-746-3814.

Hand-delivered responses should be brought to Crystal Park Five, 2451 Crystal Drive, Arlington, Virginia, Seventh Floor (Receptionist suite adjacent to the elevator lobby).

VP
November 18, 2003

A handwritten signature in black ink, appearing to read 'Vishal Patel', with a stylized flourish at the end.

Vishal Patel
Patent Examiner
Tech. Center 3600